What We Claim Is:

1. An IS-OFDM system for ultra-wideband (UWB) wireless communications that suppresses narrow-band interference, comprising an in-premises base station (IBS), said IBS comprising an IS-OFDM transceiver for communicating with a plurality of in-premises terminals (ITs) without creating interference outside an in-premises perimeter.

2. The IS-OFDM system according to claim 1, wherein said IBS receives wired traffic signals from an external network and broadcasts the received wired traffic signals to the ITs within a home.

3. The IS-OFDM system according to claim 1, wherein said IBS receives wireless communications from the ITs and routes said wireless communications from the ITs to an external network.

4. The IS-OFDM system according to claim 3, wherein said ITs transmit and receive internal in-premises wireless communications between ITs.

5. The IS-OFDM system according to claim 2, wherein an IS-OFDM UWB channel is separated into a plurality of groups, each group further comprising a plurality of bins.

6. The IS-OFDM system according to claim 5, wherein one of said groups of bins is assigned to be a control group for carrying control messages between said IBS and said ITs.

7. The IS-OFDM system according to claim 6, wherein each IT sends a request to transmit data to said IBS via said control group before attempting to transmit any data.

8. The IS-OFDM system according to claim 7, wherein said IBS keeps a record of an-going transmissions and available bandwidth.

9. The IS-OFDM system according to claim 8, wherein said IBS, based on said recorded information, responds to said request to transmit with one of a message granting said request to transmit and blocking said request to transmit.

10. The IS-OFDM system according to claim 9, wherein a message granting said request to transmit indicates the group of bins in which said IT may transmit data.

11. The IS-OFDM system according to claim 1, wherein said IS-OFDM transceiver further comprises:

an IS-OFDM transmitter; and

an IS-OFDM receiver, wherein a transmitted signal comprises a plurality of subcarriers, and further wherein each subcarriers contains more than one and potentially all symbols transmitted in a given frame.

12. The IS-OFDM system according to claim 11, wherein said IS-OFDM transmitter further comprises:

a serial-to-parallel (S/P) converter, said S/P converter accepts an input data stream and operates on said input data stream to produce a plurality of parallel data streams;

a first plurality of S/P converters, each of said first plurality of S/P converters accepts one of said parallel data streams and produces a plurality of parallel data sub-streams;

a plurality of spreaders, each spreader of said plurality of spreaders coupled to one of said first plurality of S/P converters, each spreader of said plurality of spreaders operates on one of said plurality of parallel data sub-streams spreading said one of said plurality of parallel data sub-streams by an orthogonal binary code sequence resulting in a plurality of parallel spread data sub-streams separated from each other by orthogonal codes;

a second plurality of S/P converters, each of said second plurality of S/P converters accepts one of said plurality of parallel spread data sub-streams and produces a plurality of parallel data signals;

an encoder for encoding said plurality of parallel data signals to produce a plurality of encoded data signals;

an IDFT coupled to said encoder, said IDFT accepts said plurality of encoded data signals and produces a plurality of IDFT outputs;

a parallel-to-serial (P/S) converter coupled to said IDFT, said P/S converter accepts said plurality of IDFT outputs and produces an intermediate IS-OFDM data signal, wherein said intermediate IS-OFDM data signal comprises a plurality of frames, said P/S converter further adds a cyclic prefix to each frame of said intermediate IS-OFDM data signal to produce an IS-OFDM data signal; and

a digital-to-analog (D/A) converter, said D/A converter accepts said IS-OFDM data signal and produces an IS-OFDM transmit signal.

13. The IS-OFDM system according to claim 11, wherein said IS-OFDM receiver further comprises:

an analog-to-digital (A/D) converter, said A/D converter accepts a received analog signal and operates on said received analog signal to produce a digital received signal;

a serial-to-parallel (S/P) converter coupled to said A/D converter, said S/P converter accepts said digital received signal, comprising a plurality of frames, and operates on said digital received signal to produce a plurality of parallel received data points, said S/P converter further operates on said digital received signal to remove a cyclic prefix from each frame;

a DFT coupled to said S/P convert, said DFT accepts said plurality of parallel received data points and operates on said plurality of parallel received data points to produce complex data signal points;

a decoder-demapper coupled to said DFT, said decoder-demapper accepts said complex data signal points and operates on said complex data signal points to produce a plurality of parallel data points;

a first plurality of parallel-to-serial (P/S) converters coupled to said decoder-demapper, said first plurality of P/S converters accepts said plurality of parallel data

points, and operates on said plurality of parallel data points to produce a serial data stream;

a plurality of despreaders coupled to one of said plurality of P/S converters, said plurality of despreaders accept said serial data stream and operate on said serial data stream in parallel with a plurality of code sequences to produce despread data signals;

a plurality of accumulators, each accumulator coupled to one of said plurality of despreaders, said plurality of accumulators accept said despread data signals and operate on said despread data signals to produce accumulated data streams;

a second plurality of P/S converters coupled to said plurality of accumulators, each of said plurality of P/S converters accepts said accumulated data streams and operates on said accumulated data streams to produce an intermediate recovered data stream; and

a P/S converter coupled to said second plurality of P/S converters, said P/S converter accepts said intermediate recovered data streams and operates on said intermediate recovered data streams to produce a recovered data stream.

14. A method for operating an IS-OFDM transmitter for ultra-wideband (UWB) wireless communications that suppresses narrow-band interference comprising the steps of:

serial-to-parallel converting an input data stream to produce a plurality of parallel data streams;

further serial-to-parallel converting said plurality of parallel data streams to produce a plurality of parallel data sub-streams;

spreading said plurality of parallel data sub-streams by an orthogonal binary code sequence resulting in a plurality of parallel spread data sub-streams separated from each other by orthogonal codes;

further serial-to-parallel converting said plurality of parallel spread data sub-streams to produce a plurality of parallel data signals;

encoding said plurality of parallel data signals to produce a plurality of encoded data signals;

operating on said plurality of encoded data signals to produce a plurality of IDFT outputs;

parallel-to-serial converting said plurality of IDFT outputs to produce an intermediate IS-OFDM data signal, wherein said intermediate IS-OFDM data signal comprises a plurality of frames;

adding a cyclic prefix to each frame of said intermediate IS-OFDM data signal to produce an IS-OFDM data signal; and

digital-to-analog converting said IS-OFDM data signal to produce an IS-OFDM transmit signal.

15. A method for operating an IS-OFDM receiver for ultra-wideband (UWB) wireless communications that suppresses narrow-band interference comprising the steps of:

analog-to-digital converting a received analog signal;

operating on said received analog signal to produce a digital received signal;

serial-to-parallel converting said digital received signal, comprising a plurality of frames, to produce a plurality of parallel received data points;

further operating on said digital received signal to remove a cyclic prefix from each frame;

further operating on said plurality of parallel received data points to produce complex data signal points;

decoding and demapping said complex data signal points to produce a plurality of parallel data points;

parallel-to-serial converting said plurality of parallel data points to produce a serial data stream;

despreading said serial data stream to produce despread data signals;

accumulating said despread data signals to produce accumulated data streams;

parallel-to-serial converting said accumulated data streams to produce an intermediate recovered data stream; and

further parallel-to-serial converting said intermediate recovered data streams to produce a recovered data stream.

16. A method for operating an IS-OFDM system for ultra-wideband (UWB) wireless communications that suppresses narrow-band interference comprising the steps of:

providing local area networking services;

providing wireless in-premises distribution of broadcast cable channels; and

providing in-premises wireless access and routing to external networks, without creating interference outside of an in-premises perimeter.

providing in-premises wireless access and routing to external networks, without creating interference outside of an in-premises perimeter.

17. The IS-OFDM system according to claim 1, wherein said IS-OFDM system provides local area networking services, wireless in-premises distribution of broadcast cable channels and in-premises wireless access and routing to external networks.